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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,104	07/31/2003	Douglas E. Berning	S-100,503	7758
35068	7590	03/23/2006	EXAMINER	
LE, HOA T				
ART UNIT			PAPER NUMBER	
1773				

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/631,104	BERNING ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	H. T. Le	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 26 August 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-11 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                     | Paper No(s)/Mail Date. _____ .  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____ .                                  |

## DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### *Claim Rejections - 35 USC § 102*

2. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by the Cheon patent (US 6,783,569).

Claim 1: The Cheon patent teaches a method of forming core-shell metallic nanoparticles comprising forming a dispersion of metal nanoparticles in an organic solvent, forming a solution comprising a metallic precursor and an organic solvent, adding the solution into the dispersion, and maintaining the mixed dispersion until core-shell nanoparticles are formed.

See Cheon, col. 2, lines 53-63. The organic solvent is served as a reducing agent for the metallic precursor. Magnetic nanoparticles are taught as the suitable metal nanoparticles (Cheon, col. 4, lines 13-46). The metal for the metallic precursor is required to have a higher reduction potential than the metal in the metal nanoparticles (Cheon, col. 4, lines 48-52), and it's shown that gold has a higher reduction potential than chromium, iron, cobalt and nickel (Cheon, col. 4, lines 54-57). At col. 8, lines 64-68, Cheon teaches gold-coated magnetic nanoparticles of cobalt, iron, and nickel. Therefore, Cheon teaches a method of coating gold directly onto a magnetic nanoparticle core.

Claims 2-3: See Cheon, col. 4, lines 13-46.

**3. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Cheon patent (US 6,783,569) as applied to claims 1-3 above, and further in view of the O'Connor patent (US 6,773,823).**

The Cheon patent discloses the claimed invention as discussed above. However teaches the core-shell formation by transmetalation reaction using an organic reducing agent (Cheon, col. 4, lines 11-13). O'Connor provides a coating method of gold on magnetic core using the same specific gold precursor and specific inorganic reducing agent as claimed. See O'Connor, col. 4, lines 6-12 and 56-65. Therefore, it would have been obvious to apply the specific gold precursor and reducing agent as taught by O'Connor in the core-shell formation of Cheon because O'Connor teaches that such method provides better stability for the shell layer (O'Connor, col. 2, lines 7-18).

**4. Claims 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Cheon patent (US 6,783,569) alone, or as applied to claims 1-3 above, and further in view of the Zheng publication (2005/0208142).**

Claims 6-11: Cheon reports that the core-shell gold-coated particles are capable of binding with biomaterials through various chemical groups. See Cheon, col. 8, line 64 to col. 9, line 5. And it is well known in the art that metal nanoparticles, especially gold nanoparticles are stabilized with thio-end (i.e. mercapto terminated) groups, functionalized with amino, carboxylic acid groups, alcohols and glycols, and bound to biopolymer ligands through these functional groups. See the Zheng publication (2005/0208142), paragraphs [0004], [0005], [0074], [0075], and [0079]-[0083]. Therefore, it would have been obvious to further

functionalize the core-shell nanoparticles with various functional groups as claimed (and which are well known in the art as demonstrated in the Zheng publication) in order to facilitate their capability in binding to biomaterials as taught by Cheon.

5. References not relied upon are considered pertinent to the claimed invention.

*Response to Arguments*

6. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new grounds of rejection set forth above.

*Conclusion*

7. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. T. Le whose telephone number is 571-272-1511. The examiner can normally be reached on 10:00 a.m. to 6:30 p.m., Mondays to Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on 571-272-1284. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



H. T. Le  
Primary Examiner  
Art Unit 1773